

Feb. 16, 1926.

1,573,210

A. C. WHIDDEN

VARIABLE FLUID CONTROLLING DEVICE

Filed August 2, 1924

Fig. 1.

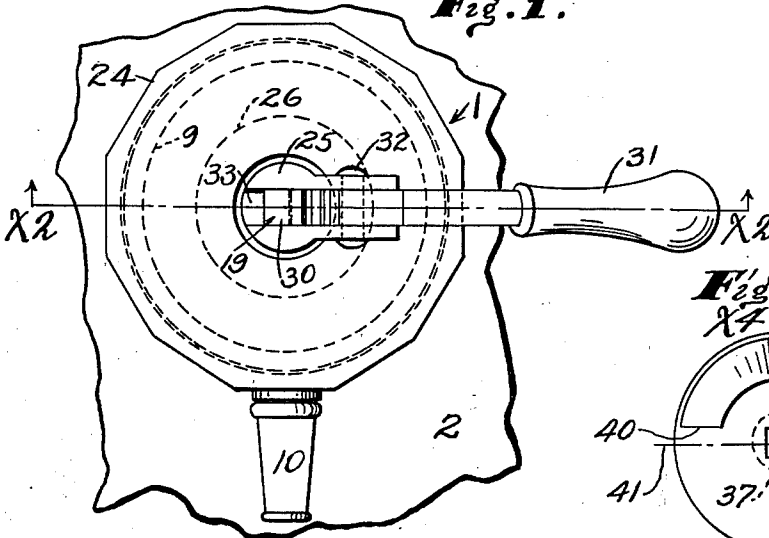


Fig. 2.

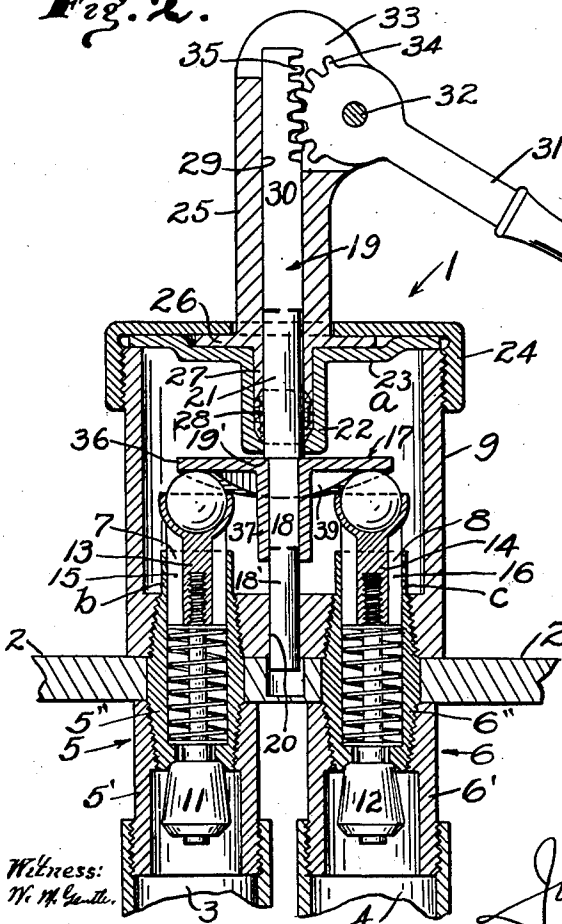


Fig. 3.

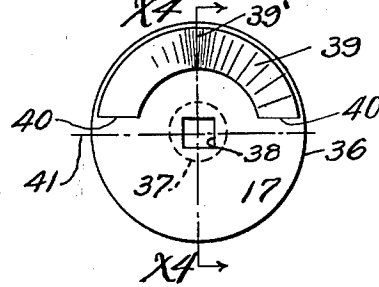
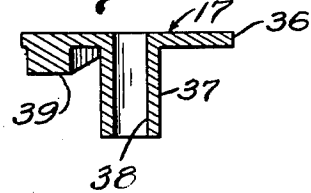


Fig. 4.



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UNITED STATES PATENT OFFICE.

AUSTIN C. WHIDDEN, OF LOS ANGELES, CALIFORNIA.

VARIABLE FLUID-CONTROLLING DEVICE.

Application filed August 2, 1924. Serial No. 729,731.

To all whom it may concern:

Be it known that I, AUSTIN C. WHIDDEN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Variable Fluid-Controlling Device, of which the following is a specification.

This invention relates to improvements over my Patent No. 1,500,694, granted July 8, 1924, and my copending application executed July 11, 1924, filed July 22, 1924, Serial No. 727,430; and more particularly to improved and novel means for controlling from different sources the delivery of various characters and volumes of liquid ranging from a pure liquid delivered from only one of the sources through all degrees of mixture with liquid from another source, to a pure liquid from the other source only.

An object of the invention is to provide simple, compact, effective and novel means for opening and closing hot and cold water valves, either singly, simultaneously or disproportionately.

An object is to provide a fluid controlling device wherein the valves which control the flow of cold and hot water discharge into a mixing chamber in the device may be conveniently and efficiently operated for the purpose of varying at any flow or volume up to full flow or maximum volume, the proportions of the hot and cold water entering the mixing chamber.

A still further object is to improve the construction of devices of this character.

The invention is broadly new, basic and pioneer in that I provide a wedging block in the form of a circular cam plate which may be rotated in one direction to open a hot water valve, and in another direction to open a cold water valve, and which may be moved in a third direction to simultaneously open both of said valves so that liquid of a predetermined volume and temperature may be obtained.

Features of the invention are shown in the construction, combination and arrangement of the parts.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

The accompanying drawing illustrates the invention.

Figure 1 is a plan view of a device con-

structed in accordance with this invention as applied to a wash bowl or other support, a fragment of which is shown.

Fig. 2 is a section on line x^2 , Fig. 1.

Fig. 3 is a bottom view of the cam plate detached.

Fig. 4 is a section on line x^4 , Fig. 3.

The water or fluid control appliance 1 is shown operatively mounted on a wash bowl 2 or other support which can be of any desired construction.

Hot and cold water passages or pipes 3, 4 are connected with respective valve casings 5, 6 comprising the members 5', 5'' and 6', 6'', respectively. Said valve casings are provided with respective outlets 7, 8 that open into a shell 9 which forms a mixing chamber a , and is provided with a single outlet 10.

The pipes 3 and 4 may be provided with the usual check valves, not shown, to prevent flow into the pipes 3, 4 from the chamber a in case the source of supply of either is cut off.

Valves 11, 12 normally close the passages 3, 4 and are provided with valve stems 13, 14 that extend into the shell 9. Said stems are provided with guides 15, 16 in the form of ribbons that engage the bores of the valve casing members 5'', 6'' and guide the valve stems therein. The valve casing members 5'', 6'' are provided with extensions b , c , to thereby form a longer bearing for the guides 15, 16.

A circular cam plate 17 adapted to overlap the ends of the valve stems may be pinned to a square portion 18 of a shaft 19 so that when the device is in closed position the plate 17 will lightly rest upon the ends of the valve stems or be spaced a small distance therefrom so as not to open the valves until desired; or such plate may be slidably mounted on such shaft and in such case will rest upon the valve stems by gravity. The shaft 19 may be provided with a shoulder 19' to force the cam plate axially of the shaft as will be more fully hereinafter explained. The shaft 19 has a rounded portion 18' that is slidably and rotatably mounted in a bearing 20 formed in the bottom of the shell 9, and is also provided with another rounded portion 21 that is similarly mounted in a stuffing box 22 that has flanges 23 clamped between the rim of the shell 9 and a cover 24 threaded onto the shell 9. A handle or lever support 25 is rotatably

mounted on the cover 24 and has an outward extension 26 mounted between the flanges 23 and cover 24 to maintain the handle or lever support 25 in position, and also has a downward extension 27 that compresses the packing 28 in the stuffing box.

A square bore 29 is provided in said support 25 to receive the square end 30 of the shaft 19.

A handle or lever 31 is pivoted at 32 in the slot or forked end 33 of the support 25. The inner end of said handle is provided with teeth 34 that engage with the rack teeth 35 formed in the shaft 19.

The cam plate 17 is in the form of a thin disc 36 having a central extension 37 provided with a square bore 38 adapted to receive the square portion 18 of shaft 19. Said plate 17 is provided on its under surface with a cam 39 that terminates at each end 40 a short distance from a center line 41 drawn normal to the diameter at the highest point 39' of the cam 39 so that when the device is assembled and in closed position the valve stems that are preferably mounted on the center line 41 will not be held in open position. The cam plate 17 may therefore be said to comprise a disc approximately one-half of which is provided with a continuous cam surface 39 having a high spot approximately in the middle of said surface, and the other half of which is entirely smooth or flat, or said latter half is in other words devoid of any means for operating the valves by rotation of the cam plate.

In operation the cam plate will be assembled so that in neutral position the ends 40 of the cam 39 will be equally spaced from the valve stems 13, 14 and the handle support 25 may be mounted on the shaft 19 so that the lever 31 will extend from the device in any convenient direction. A preferred direction is in a plane corresponding to a diameter through the disc 36 and the high spot of the cam 39.

If the operator desires to obtain hot and cold water in equal proportions the lever or handle 31 is moved upward and the teeth 34 move the shaft 19 and cam plate 17 downward which engages the valve stems 13, 14 and moves said stems to open the valves 11, 12 equally.

Assuming that only hot water is desired and that valve 11 is the one to be opened, the lever 31 is moved anti-clockwise and the cam 39 of the cam plate 17 will force the stem 13 and valve 11 downward to open the valve. The lever may be moved in such direction until the valve is opened the desired distance. During this movement the cold water valve 12 remains closed because that portion of the cam disc presented to the valve stem 14 is flat or smooth, that is devoid of any projections.

Assuming the hot water valve is opened above and that the operator desires to reduce the temperature of the water to accomplish such end the lever 31 is raised, thereby depressing both valve stems, opening the cold water valve 12 and further opening the hot water valve 11.

If the operator desires to change the temperature of the water without changing the volume of liquid discharging from the outlet 10, the lever 31 may be moved in a clockwise direction at the same time that it is being raised, thereby permitting the valve 11 to close a predetermined distance while the valve 12 is opening.

When only cold water is desired the lever 31 is moved in a clockwise direction.

A distinct advantage gained by my construction over similar devices is the full flow of one passage may be obtained independently of the flow from the other passage and that the temperature or characteristic of the liquid emitting from the outlet 10 may be changed at any flow up to and including full flow, and the volume of the discharging liquid may be maintained during changes of temperature.

I claim:

1. A fluid controlling device comprising passages; valves for said passages respectively each having valve stems; means to operate said valves comprising a disc adapted to engage said stems and approximately one-half of which is provided with a continuous cam surface having a high spot approximately in the middle of said surface, and the other half of which is flat; and means to move said disc in one direction to open one of said valves, and in another direction to open another of said valves; and in a third direction to cause simultaneous operation of said valves.

2. In a device of the character set forth, valves having stems; and a disc to engage with said stems and to operate said valves, said disc being provided with a continuous cam surface having a high spot approximately in the middle of said surface, said cam surface being arranged between said valve stems and terminating a short distance therefrom and adapted to operate one valve or the other in accordance with its direction of rotation, the remainder of said disc being devoid of protuberances so that when said disc is rotated to operate one valve the other valve will remain closed.

3. A fluid controlling device comprising a casing; passages communicating with said casing; valves controlling said passages; valve stems secured to said valves; a cover for said casing; a stuffing box extending from said cover; a shaft extending through said stuffing box; a disc operated by said shaft having a continuous cam surface having a high spot approximately in the middle

of said surface, said cam surface terminating at each end a short distance from said valve stems and the remainder of said disc being flat; and means to rotate said shaft to cause said cam surface to operate one or the other of said valves according to the direction of rotation and to move said shaft axially to open said valves simultaneously and disproportionately as desired.

4. A fluid controlling device comprising a casing, passages opening into said casing; valves controlling said passages; a cover for said casing; a stuffing box having flanges secured between said casing and cover; a handle support rotatably mounted between said cover and said flanges; a shaft extending through said stuffing box and handle support; a cam plate secured to one end of said shaft and adapted to operate said valves; and a lever pivoted to said support and adapted to rotate said shaft and move the same axially as desired.

5. A fluid controlling device comprising a casing, passages opening into said casing; valves controlling said passages; a cover for said casing; a stuffing box having flanges secured between said casing and cover; a handle support rotatably mounted between said cover and said flanges and having a square bore; a shaft extending through said stuffing box and having a square portion fitted in the square bore of said handle support; a cam plate secured to one end of said shaft and adapted to operate said valves; and a lever pivoted to said support and adapted to rotate said shaft and move the same axially as desired.

6. A fluid controlling device comprising a casing, passages opening into said casing; valves controlling said passages; a cover for

said casing; a stuffing box having flanges secured between said casing and cover; a handle support rotatably mounted between said cover and said flanges; a shaft extending through said stuffing box and handle support and provided with rack teeth at one end; a cam plate secured to the other end of said shaft and adapted to operate said valves; and a lever pivoted to said support adapted to rotate said shaft and being provided on its inner end with teeth adapted to mesh with said rack teeth to move said shaft axially when said lever is moved about its pivot.

7. A fluid controlling device comprising a casing, passages opening into said casing; valves controlling said passages; a cover for said casing; a stuffing box having flanges secured between said casing and cover; a handle support rotatably mounted between said cover and said flanges by outward extensions on said support positioned between said cover and said flanges, a downward extension on said support extending into said stuffing box to compress the packing therein, a shaft extending through said stuffing box and handle support and provided with rack teeth at one end; a cam plate secured to the other end of said shaft and adapted to operate said valves; and a lever pivoted to said support adapted to rotate said shaft and being provided on its inner end with teeth adapted to mesh with said rack teeth to move said shaft axially when said lever is moved about its pivot.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 28th day of July, 1924.

AUSTIN C. WHIDDEN.